I claim:

**1.** An article comprising:

a multi-layer substrate;

a support portion that is defined from, and rotatably coupled to, said multi-layer substrate;

and an element portion coupled to said support portion, said element portion is movable between:

a first position within said multi-layer substrate below an exterior surface thereof, and

a second position outside of said multi-layer substrate above said exterior surface thereof.

**2.** The article of claim 1 wherein said multi-layer substrate comprises at a first layer, a second layer, and an intermediate layer separating said first layer and said second layer.

**3.** The article of claim 2 wherein said support portion comprises a torsional member that is rotatably coupled to said multi-layer substrate.

**4.** The article of claim 3 wherein said support portion further comprises a beam, wherein said element portion depends from said beam.

**5.** The article of claim 4 wherein a working surface of said element portion is physically adapted to receive an optical signal.

**6.** The article of claim 5 wherein said physical adaptation of said working surface is that it is reflective, and further wherein said working surface is substantially orthogonal to said exterior surface of said multi-layer substrate.

**7.** The article of claim 6 wherein:

said torsional member and said beam comprise a part of said first layer; and

said element portion comprises a part of said second layer.

**8.** The article of claim 7 wherein a height of said working surface of said element portion is defined by a thickness of said second layer.

**9.** The article of claim 8 wherein said first layer and said second layer comprise silicon.

**10.** The article of claim 9 wherein said multi-layer substrate comprises a silicon-on-insulator wafer having a thin silicon layer overlying an insulating layer that overlies a thick silicon layer, and further wherein:

said thin silicon layer is said first layer;

said insulation layer is said intemediate layer; and

said thick silicon layer is said second layer.

**11.** The article of claim 4 comprising:

an actuating plate that depends from said beam; and

an electrode disposed in spaced relation with said actuating plate, wherein:

under the action of an applied potential difference, said electrode is operable to cause said actuating plate to move towards said second layer of said multi-layer substrate, which movement in turn causes said element portion to move towards said second position outside of said multi-layer substrate.

**12.** The article of claim 11 further comprising a first waveguide and a second waveguide that are disposed in orthogonal relation to one another, wherein:

when said element portion is in said first position, said first waveguide and said second waveguide are in optical communication with one another; and

when said element portion is in said second position, said first waveguide and said second waveguide are not in optical communication with one another.

**13.** The article of claim 12 wherein said article is an optical cross connect.

**14.** An article comprising a support portion that is defined from at least a first layer of a multi-layer substrate and an element portion that is defined from at least a second layer of said multi-layer substrate, wherein:

an interior of said multi-layer substrate is defined between a top surface of said first layer and a bottom surface of said second layer; and

said element portion comprises a part of said second layer, wherein said element portion is movable between a first position in said interior of said multi-layer substrate and a second position above said top surface of said first layer.

**15.** The article of claim 14 wherein a working surface of said element portion is physically adapted to receive an optical signal, and further wherein said working surface is disposed in orthogonal relation to said top surface of said first layer.

**16.** The article of claim 15, wherein a height of said working surface is defined by a thickness of said second layer of said multi-layer substrate.

**17.** An article comprising:

an array having *n* columns and *n* rows of optical elements that are disposed in and rotatably coupled to a multi-layer substrate;

a first 1 x *n* array of optical waveguides, wherein each one optical waveguide in said first array is aligned for optical communication with said optical elements in one of said *n* columns; and

a second 1 x *n* array of optical waveguides disposed in orthogonal relation to said first array of optical waveguides, wherein each one optical waveguide in said second array is aligned for optical communication with said optical elements in one of said *n* rows;

wherein, each optical element comprises:

an element portion that is defined from at least one layer of said multi-layer substrate, said element portion having an optical signal receiving surface that is disposed in orthogonal relation to a major surface of said multi-layer substrate;

a support portion that is coupled to said element portion, wherein said support portion allows said element portion to move independently of said multi-layer substrate;

and an electrode operable, under the action of an applied potential difference, to cause said element portion to move to between:

a first position wherein said element portion is within said multi-layer substrate; and

a second position wherein said element portion is outside of said multi-layer substrate.

**18.** The article of claim 17 further comprising collimating/focusing lenses that are operable to collimate optical signals leaving said optical waveguides and to focus optical signals entering said optical waveguides.

**19.** The article of claim 17 wherein said multi-layer substrate comprises a silicon-on-insulator wafer having a thick silicon layer, a layer of oxide disposed on said thick silicon layer, and a thin silicon layer disposed on said layer of oxide.

**20.** The article of claim 19 wherein said element portion comprises a part of said thick silicon layer.

**21.** The article of claim 20 wherein said optical signal receiving surface of said element portion comprises facets having a <111> crystal orientation.

**22.** A method for forming an optical element in a multi-layer substrate having a top layer, a bottom layer, and an intermediate layer sandwiched therebetween, comprising:

defining a support portion of said optical element in said top layer of said multi-layer substrate by patterning and etching said top layer through to said intermediate layer; and

defining an element portion of said optical element in said bottom layer of said multi-layer substrate by patterning and etching said bottom layer through to said intermediate layer such that a height of a working surface of said element portion is defined by a thickness of said bottom layer; and

releasing said support portion and said element portion of said optical element from said multi-layer substrate by removing portions of said intermediate layer that are exposed as a result of defining said support portion and said element portion of said optical element structure,

wherein said optical element remains attached to said multi-layer substrate by said support portion.

**23.** The method of claim 22 wherein said multi-layer substrate comprises an SOI wafer.

**24.** The method of claim 22 wherein the step of defining an element portion of said optical element further comprises defining said working surface of said element portion so that it is oriented orthogonal to an upper surface of said multi-layer substrate.

**25.** The method of claim 24 wherein the step of defining an element portion of said optical element further comprises defining said working surface to be a <111> facet.

**26.** The method of claim 22 wherein the step of defining said support portion of said optical element further comprises defining a torsional member, an actuating plate and a beam.